

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

CIVIL ACTION NO. 99-10739-RWZ

UNITED STATES FILTER CORP., et. al.

v.

GLEGG WATER CONDITIONING, INC., & E-CELL CORP.

ORDER REGARDING CLAIM CONSTRUCTION

May 4, 2004

ZOBEL, D.J.

Plaintiffs United States Filter Corporation, U.S. Filter/Ionpure, Inc. and IP Holding Company, and Millipore Corporation allege that defendants Glegg Water Conditioning, Inc., and E-Cell Corporation have infringed United States Patent Nos. 5,308,466 (“the ‘466 patent”); 5,316,637 (“the ‘637 patent”); 4,753,681 (“the ‘681 patent”); 5,259,936 (“the ‘936 patent”); B1 5,346,924 (“the ‘924 patent”); and 5,116,509 (“the ‘509 patent”). Defendants, in turn, counterclaim that plaintiffs have infringed United States Patent Nos. 6,228,240 (“the ‘240 patent”) and 5,961,805 (“the ‘805 patent”). All eight patents-in-suit pertain to a water purification process known as electrodeionization. The parties dispute the construction of claim terms from four of the patents at issue: the ‘637, ‘466, ‘924, and ‘936 patents.

The construction of patent claims is a matter of law for this Court to decide. Markman v. Westview Instruments, Inc., 517 U.S. 370, 388-89 (1996). Normally, “there is a strong presumption that the ordinary and accustomed meaning of a claim term governs its construction.” Boehringer Ingelheim Vetmedica, Inc. v. Schering-Plough

Corp., 320 F.3d 1339, 1347 (Fed. Cir. 2003). However, the presumption may be overcome if the patent specification or prosecution history “clearly and deliberately set[s] forth” a different meaning. K-2 Corp. v. Salomon S.A., 191 F.3d 1356, 1363 (Fed. Cir. 1999); Boehringer, 320 F.3d at 1347. Such a circumstance arises where “the patentee has chosen to be his or her own lexicographer by clearly setting forth an explicit definition for a claim term” or “where the term or terms chosen by the patentee so deprive the claim of clarity that there is no means by which the scope of the claim may be ascertained from the language used.” Johnson Worldwide Associates, Inc. v. Zebco Corp., 175 F.3d 985, 990 (Fed. Cir. 1999). If the intrinsic evidence fails to resolve ambiguity in the claim language, evidence extrinsic to the patent file and history such as expert and inventor testimony, dictionaries, and technical treatises and articles may be considered “to help the court come to the proper understanding of the claims; it may not be used to vary or contradict the claim language.” Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1584 (Fed. Cir. 1996). A “means-plus-function” claim “shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” 35 U.S.C. § 112 ¶ 6.

Before the hearing held on October 2, 3, and 17, 2003, the parties agreed to definitions of a number of terms, and they will file a listing of those together with their agreed definitions. A number of additional terms were resolved by consent at the hearing. They are noted in the chart below, following that which contains the court’s construction of those terms the parties did not resolve. In light of the applicable legal standard, the parties’ written submissions, and the argument of counsel, the claim terms are construed as follows:

I. '637 Patent Claim Terms

A. Terms in Dispute

Term	Court's Construction
Term 1: ion depleting compartment	The ion depleting compartment comprises a cation permeable membrane, an anion permeable membrane, and ion exchange material between the membranes.
Term 2: comprises means for allowing an increase in the transfer of large or highly charged ions across the membrane	<p>"Comprises" means "includes" or "contains, among other things."</p> <p>A membrane that comprises "means for allowing an increase in the transfer of highly charged ions across the membrane" refers either (1) to a heterogeneous membrane that includes cation exchange resin that has less than about 8% crosslinking or anion exchange resin that has less than about 6% crosslinking or (2) to a homogenous membrane that has between 30 and 45% crosslinking.</p>
Term 8: anion permeable [anion exchange] membrane is a heterogeneous membrane containing resin that is [comprising anion exchange resins that are] crosslinked at less than about 6%	A membrane that includes ion exchange resin allowing anions to transfer through the membrane, where the amount of crosslinking – the effective portion of divinyl benzene ("DVB") present in the resin assuming no decrosslinking – is any value less than the degree of crosslinking of conventional anion exchange resins (which have between about 6% and about 8% crosslinking).

Term 10: cation permeable [or cation exchange] membrane contains [or containing] a resin that is [or containing cation exchange resins that are] crosslinked at less than about 8%	A membrane that allows cations to transfer through it that includes resin where the amount of crosslinking is any value less than the degree of crosslinking of a conventional cation exchange resins (which have between about 8% and about 10% crosslinking).
Term 25: conducting the process under conditions of pH greater than about 9 in the concentrate stream	The process is conducted at a pH greater than about 9 in the concentrate stream.
Term 26: silica is collected in the concentrate stream	Silica is removed from an electrodeionization ("EDI") device by collecting it in the concentrate stream.
Term 27: conducting the process under conditions of pH less than about 5 in the concentrate stream	The process is conducted at a pH less than about 5 in the concentrate stream.
Term 28: conducting the process using a concentrate stream having a velocity of at least 3 times nominal concentrate velocity	<p>The process uses a concentrate stream having a velocity of at least about 3 times nominal concentrate velocity.</p> <p>Nominal velocity is the velocity that occurs at a flow rate at which liquid streams flow through EDI systems under normal operating conditions. Velocity higher than normal velocity can be achieved by recirculating some of the concentrate effluent to the concentrate feed.</p>
Term 29: a cation exchange resin, said resin having a moisture content of at least about 45%	"Moisture content" refers to the percentage of water in resin. "A moisture content of at least about 45%" is water content in excess of 45%.
Term 30: an anion exchange resin, said resin having a moisture content of at least about 45%	"Moisture content" refers to the percentage of water in resin. "A moisture content of at least about 45%" is water content in excess of 45%.

Term 31: operating the apparatus under conditions that permit removal of silica ions to a level of less than about 50 [or 5] parts per billion	Operating the apparatus with low crosslinked resin in the depleting compartments, high concentrate velocity, high concentrate stream pH, and the AC overlay described at col. 18, ll. 37-41 of the '637 patent.
Term 38: means defining a diluting stream	Includes a spacer and membranes comprising the diluting compartment.
Term 39: means defining a concentrating stream	Includes a spacer and membranes comprising the concentrating compartment.

B. Definitions to Which the Parties Agreed at the Hearing

Term	Agreed Upon Construction
Term 3: large ions	Ions having an equivalent weight of greater than 200.
Term 4: highly charged ions	Ions having a valence of 3 or greater in solution.
Term 5: on an equivalent weight basis	Based on the molecular weight of an ion divided by its ionic charge.
Term 6: an increase in the transfer of large or highly charged ions across the membrane on an equivalent basis of at least 25% when subjected to an increase in voltage across the membrane causing an increase in electric current across the membrane of the order of two times or less	When the current across the membrane is increased two times or less, the transport across the membrane of large or highly charged ions increases by more than 25% based on the equivalent weight of the large or highly charged ions.

Term 13: the resistance of the cation exchange resin contained in the membrane to calcium relative to hydrogen ions is less than 2:1 when measured using a DC conductance test	<p>“DC conductance test” refers to the test described in the ‘637 patent from column 11, line 48 to column 12, line 66.</p> <p>“Resistance” is voltage divided by current.</p> <p>“Resistance of cation exchange resin to calcium relative to hydrogen ions” refers to resistance of resin that has been conditioned with calcium ions as compared to the resistance of resin that has been conditioned with hydrogen ions.</p>
Term 14: anion exchange resin comprises a Type I resin that is crosslinked at about 6% or less	<p>“Type I resin” is resin that includes quarternary ammonium ($-\text{CH}_2\text{N}(\text{CH}_3)_3^+$) functional groups.</p>
Term 17: ion exchange polishing cartridge	<p>An ion exchange polishing cartridge is a device that contains anion and/or cation exchange resins and in which ionic and ionizable impurities are transferred from water to the resin. It is located downstream of the electrodeionization device.</p>
Term 20: means for removing at least 80% [90%] by weight of silica contained in the liquid	<p>In order to achieve 80% or greater removal, membranes containing low crosslinked resin must be combined with (a) “high concentrate velocity,” or (b) high concentrate pH, or (c) an “AC overlay” in certain circumstances.</p> <p>The “means for removing at least 90% by weight of silica contained in the liquid” refers to the membrane recited in claim 48 or claim 106 plus either (a) the use of low crosslinked resin in the depleting compartments of the device and high velocity concentrate streams or (b) high concentrate pH and Type I resin in the depleting compartment.</p>

Term 23: when subjected to a change in pH in either one or both of the diluting or concentrating stream allows an increase in the transfer of ions which are only weakly ionized at neutral pH	A change in the pH of the diluting or concentrating stream or both that allows an increase in the transfer of ions that are weakly ionized at a pH of about 7.
--	--

II. '466 Patent Claim Terms at Issue

Term	Court's Construction
Term 36: the concentrating compartment to be pressurized to a level sufficient to maintain substantially all dissolved CO ₂ [or substantially all dissolved gasses] in solution	A pressure that is sufficient to maintain substantially all CO ₂ [or substantially all dissolved gasses] in solution in the concentrating compartment.

III. '924 Patent Claim Terms at Issue

A. Terms in Dispute

Term	Court's Construction
Term 1: an unsupported heterogeneous ion exchange material	"Unsupported" means without structural or physical support.
Term 3: polyethylene	A long chain polymer with CH ₂ as the repeating unit.
Term 4: linear low density polyethylene	A polyethylene lacking long chain branching, having low density, namely a maximum density of about 0.940.
Term 7: the material contains approximately 25-65% by weight ion exchange resin	The heterogeneous ion exchange component contains ion exchange resin in an amount that is approximately 25-65% of the weight percent of the ion exchange material. ¹

¹ At the October hearing, the parties disputed whether the weight of the ion exchange material is to be measured on a "dry basis" or "in the state in which [the resin

Term 8: the material contains approximately 44-55% by weight ion exchange resin	The heterogeneous ion exchange component contains ion exchange resin in an amount that is approximately 44-55% of the weight percent of the ion exchange material.
Term 9: the material is adhered to a structural element of the apparatus	The heterogeneous ion exchange material is attached by interfacial forces to a structural element of the apparatus.

B. Definition to Which the Parties Agreed at the Hearing

Term	Agreed Upon Construction
Term 6: high density polyethylene	A polyethylene whose density is 0.940 or more.

IV. '936 Patent Claim Terms at Issue

Term	Court's Construction
Term 1: a process for purifying resin particles to produce resin particles	A process to purify resin particles.
Term 2: to produce resin particles containing less than about 1% anionic impurities other than hydroxyl ion or less than about 0.1 per cent cationic impurities other than hydrogen ion	A process for purifying resin particles to a level such that the purified resin particles can contain less than about 1% anionic impurities other than hydroxyl ion or less than 0.1% cationic impurities other than hydrogen ion.

DATE

/s/ Rya W. Zobel
RYA W. ZOBEL
UNITED STATES DISTRICT JUDGE

and ion exchange material] are found.” The intrinsic evidence does not specify the state in which the material is to be measured, and the extrinsic evidence and argument of counsel failed to illuminate the ordinary and accustomed meaning of the claim term.